UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/477,101	01/04/2000	LINDEN A. DECARMO	2655-0018	8713

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EXAMINER
ALI, SYED J

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date *Oct. 11, 2005*.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed October 11, 2005. Claims 1-19 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Specification

3. The cross reference related to the application cited in the specification must be updated (i.e. update the relevant status, with PTO serial numbers or patent numbers where appropriate, on page 2, lines 2-9; page 10, lines 5-7). The entire specification should be so revised.

Claim Objections

4. **Claims 1, 8, and 15 are objected to because of the following informalities:**

a. In lines 3 and 9 of claim 1, "an associated a dedicated" is grammatically improper. It appears that "an associated" should be deleted.

b. Claims 8 and 15 contain similar errors to those noted in claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. **Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. ("A Dynamic Load-Balancing Policy With a Central Job Dispatcher**

[LBC]) (hereinafter Lin) in view of Potter et al. (USPN 5,924,093) (hereinafter

Potter), and further in view of Krishnaswamy et al. (USPN 6,909,708) (hereinafter

Krishnaswamy).

6.   As per claim 1, Lin teaches the invention as claimed, including in a computer

system, a method, performed at a manager (pg. 149 col. 1, load balancing is preferably

performed at a central location), of distributing events among a plurality of nodes (pg.

149 col. 2, the manager redistributes jobs among nodes in a dynamic manner), each node

having a dedicated event queue in which events are queued (pg. 150 col. 1, each node has

a queue of jobs and communicates the number of jobs in the queue to the central

manager), the method comprising:

      a.   determining a workload level for each of the plurality of nodes (pg. 149

col. 1, each node sends a message to the manager when its state changes, i.e. the

manager always knows the current workload for each node);

      b.   determining that a first of the plurality of nodes is inefficiently handling its

assigned workload (pg. 150 col. 1, in response to a node having an empty job

queue, the manager finds the node with the largest workload, i.e. the node that is

handling its load in the least efficient manner); and

      c.   reassigning an event from the queue dedicated to the first node to the

queue dedicated to a second of the plurality of nodes (pg. 150 col. 1, the job is

taken from the heavily loaded node and reassigned to the node that requires

another job).

2.   Potter teaches the invention as claimed, including the conventional association of threads to nodes on a one-to-one basis in distributed systems (Abstract, each node contains 'one or more threads', such that each node may consist of a single thread of execution), i.e. a node can be considered analogous to a thread since each node has one thread (col. 1 lines 11-15, 22-57, conventional parallel processors distribute threads among nodes in a 1:1 ratio), and each node containing a task queue (col. 4 lines 41-50, each node contains a local buffer for storing requests, wherein it is well-known in the art that a buffer is a form of queue when operated under a FIFO scheme) (a LIFO scheme would be analogous to a stack).

3.   Krishnaswamy teaches the invention as claimed, including application of conventional load balancing techniques to internet telephony (col. 107 lines 33-41), where call flow events are treated in the same manner as queued tasks or events in any other computer system (cols. 73-77: conventional computing systems; col. 78: using the internet for telephone applications; cols. 92-96: using object oriented programming techniques to support internet telephony).

4.   There are some noted differences between the explicit claim language and the teachings of Lin. However, Examiner submits that the differences would have been obvious to a person having ordinary skill in the art, when Lin is considered in light of the teachings of Potter and Krishnaswamy. There are two main differences between Lin and the claimed invention: (1) Lin discusses load balancing among distributed nodes, whereas the claimed invention balances load among threads; and (2) Lin does not extend the load balancing scheme to an internet telephony system.

With respect to the first difference, Potter shows that a thread and a node are analogous, in that conventional distributed systems have one thread per node. A person having ordinary skill in the art would be motivated to combine Lin and Potter, as Potter indicates that virtual processors are deployed in a distributed manner such that the available hardware are arranged for optimal balance and efficiency (col. 4 lines 41-50). Thus, a load-balancing scheme, as that taught by Lin, would aid in achieving the balance and efficiency desired.

With respect to the second difference, Krishnaswamy indicates that load balancing is particularly important in internet telephony systems, such that calls are properly routed with minimal overhead or backlog. Thus, a person having ordinary skill in the art would be motivated to combine Lin and Krishnaswamy to ensure that load is properly distributed, allowing high quality telecommunication with minimal backlog, while dynamically responding to changes in load.

Hereinafter, the combination of Lin, Potter, and Krishnaswamy will be treated as implicitly teaching redistribution of call flow events among queues dedicated to specific threads, as such has been shown to be obvious in light of the combination.

5.   As per claim 2, Lin teaches the invention as claimed, including the method according to claim 1 further comprising the step:

d.   processing the call flow events associated with each of the plurality of threads (pg. 150 col. 1).

6.   As per claim 3, Lin teaches the invention as claimed, including the method according to claim 1 wherein step c. further comprises:

      c1.   removing a call flow event from the call flow event queue associated within the first thread (pg. 150 col. 1); and

      c2.   placing the removed call flow event in the call flow event queue associated with the second thread (pg. 150 col. 1).

7.   As per claim 4, Lin teaches the invention as claimed, including the method according to claim 1 wherein step c. further comprises:

      c1.   selecting the second thread in accordance with the number of call flow events in the call flow event queue associated with the second thread (pg. 150 col. 1).

8.   As per claim 5, Lin teaches the invention as claimed, including the method according to claim 1 wherein step c further comprises:

      c1.   allocating the call flow events to a thread within the computer system with the least call flow load (pg. 150 col. 1).

9.   As per claim 6, Lin teaches the invention as claimed, including the method according to claim 1 wherein step b further comprises:

      b1.   determining whether the number of call flow events in the call flow event queue associated with a thread has exceeded a predetermined criteria (pg. 150 col. 1).

10.   As per claim 7, Lin teaches the invention as claimed, including the method

according to claim 1, wherein step a comprises:

a1.   assigning call flow events among the call flow queues associated with the

respective plurality of threads in the system (pg. 150 col. 1).

11.   As per claim 17, Lin teaches the invention as claimed, including the method

according to claim 1, further comprising:

d.   determining whether a call flow balance has been achieved among the

plurality of threads (pg. 150 col. 1);

e.   processing the call flow events associated with each of the plurality of

threads (pg. 150 col. 1).

12.   As per claims 8-14 and 18, Lin teaches the invention as claimed, including a

computer program product having a computer usable medium having program code

embodied in the medium, operable to perform the method of claims 1-7 and 17,

respectively (pg. 148 col. 1).

13.   As per claims 15-16 and 19, Lin teaches the invention as claimed, including an

apparatus adapted to perform the method of claims 1-7 and 17, respectively (pg. 148 col.

1).

Response to Arguments

7.   **Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new grounds of rejection.**

Conclusion

8.   Applicant's amendment necessitated the new grounds of rejection presented in this Office action.   Accordingly, **THIS ACTION IS MADE FINAL.**   See MPEP § 706.07(a).   Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J. Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T. An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
December 15, 2005

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